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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,460	06/26/2003	Nayan H. Joshi	ATOTP0104US	3492
7590	07/27/2006			EXAMINER BAREFORD, KATHERINE A
Armand P. Boisselle Renner, Otto, Boisselle & Sklar, LLP Nineteenth Floor 1621 Euclid Avenue Cleveland, OH 44115			ART UNIT 1762	PAPER NUMBER
DATE MAILED: 07/27/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/606,460	JOSHI ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 19 June 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-93 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 28-31,36-42,50,51,55-62 and 66-93 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Claims 1-27, 32-35, 43-49, 52-54 and 63-65 are canceled*

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

1. The amendment of June 19, 2006 has been received and entered.

With the amendment claims 1-27, 32-35, 43-49, 52-54, 63-65 are canceled and claims 28-31, 36-42, 50-51, 55-62 and 66-93 (including new claims 73-93) are pending for examination.

### *Claim Objections*

2. Claims 28, 36, 40, 55, 60, 66 and 73 are objected to because of the following informalities: (1) claim 28, last two lines (part (ii))~~¶~~ should be deleted as it repeats material in part (i). (2) claim 36, line 12, "the at least one inhibitor" should be "the inhibitor" for proper antecedent basis. (3) claim 36, last two lines (part (ii))~~¶~~ should be deleted as it repeats material in part (i). (4) claim 40, last two lines (part (ii))~~¶~~ should be deleted as it repeats material in part (i). (5) claim 55, line 1, "wherein the" should be "wherein the inhibitor is the nitrogen containing heterocyclic compound and the" for proper antecedent basis. (6) claim 60, line 14, "the at least one inhibitor" should be "the inhibitor" for proper antecedent basis. (7) claim 60, last two lines (part (ii))~~¶~~ should be deleted as it repeats material in part (i). (8) claim 66, line 1, "wherein the" should be "wherein the inhibitor is the nitrogen containing heterocyclic compound and the" for proper antecedent basis. (9) claim 73, line 1, "wherein the" should be "wherein the

inhibitor is the nitrogen containing heterocyclic compound and the" for proper antecedent basis.

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

3. The rejection of claims 28-31, 36-42, 50-52, 54-63 and 65-72 under 35 U.S.C. 112, first paragraph is withdrawn due to applicant's amendments of June 19, 2006 to the claims as to the specific material of the inhibitor.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 28, 36, 40, 50-51, 57-62, 68-71, 74-76, 78-81, 84-87 and 91-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman (US 2580773) in view of Eckles (US 5405523).

Claims 28, 36, 40, 60: Heiman teaches a process for depositing zinc or a zinc alloy protective coating on aluminum or aluminum based alloy substrates. column 1, lines 1-20, column 2, lines 30-40 and column 6, lines 60-75. Heiman teaches immersing an aluminum or aluminum based alloy substrate in an aqueous acidic immersion plating solution. Column 2, lines 30-50 and column 3, line 45 through column 4, line 5 (the amount of acid added would make the bath acidic). The bath can contain zinc ions and fluoride ions. Column 3, lines 45-50. The bath can also contain nickel and/or cobalt ions. Column 2, lines 30-40 and column 6, lines 60-75. The solution can be free of cyanide ions, as no cyanide is described of being present. See column 3, lines 45-60 and column 6, lines 60-75. The substrate is immersed in the bath for a period of time to deposit the desired coating. Column 5, lines 50-60. Then the coated substrate is removed from the immersion plating. Column 5, lines 50-60. The bath can be used to perform immersion plating without electroplating or it can be used to perform electroplating. Column 3, lines 45-60, column 4, lines 15-20, and column 6, lines 70-75 (the bath can be used with or without current). The HF acid can be present in the

solution in an amount of from 0.2 N to 2.5 N (1.0 N = 35.0 ml/l of HF of 48% acid).

Column 3 line 65 through column 4, line 10.

Claim 40: after the substrate is plated with the zinc material, other materials can be electrodeposited on the plated substrate. Column 7, lines 20-30.

Claim 51, 69, 76, 85: the solution can contain other metal ions, including iron or manganese. Column 2, lines 35-40.

Claim 59, 70, 74, 84: the solution can be free of aliphatic amines and aliphatic hydroxylamines, as none is described as being present. See column 3, lines 45-60 and column 6, lines 60-75.

Heiman teaches all the features of these claims except (1) the pH of the solution, (2) the presence of the inhibitor, (3) the precise amounts of each material in the bath (claims 36, 57, 58, 60, 78, 79, 91, 87), (4) the presence of complexing agents (claim 50, 61, 62, 71), (5) the inhibitor material.

However, Eckles teaches a method for depositing a zinc alloy protective coating on metal substrates. Column 1, lines 45-55. The method is by electroplating. Column 1, lines 45-55. The method includes immersing a metal substrate in an aqueous acid plating solution having a pH of from about 3.5 to about 6.2. Column 2, lines 40-46. The bath can comprise zinc ions, and nickel and/or cobalt ions. Column 2, lines 25-30 and column 4, lines 10-20. The bath also contains an "inhibitor" material containing nitrogen and/or sulfur atoms (the brightener). Column 2, line 46 through column 3, line 8. The substrate is immersed for a period of time sufficient to deposit the coating.

column 6, lines 40-45. The substrate is removed from the bath, because the substrate must inherently be removed from the bath for use. The solution can be free of cyanide. Column 6, lines 25-40. The solution can contain 4--50 g/l of zinc ions. Column 4, lines 45-50. The solution can contain about 0.02--20 g/l alloying ions, such as nickel and/or cobalt. Column 4, lines 53-68. The solution can contain about 0.05 – 2 g/l of the nitrogen containing compound. Column 4, lines 5-10. The solution can contain acetate (one of applicant's claimed complexing agents). Column 4, lines 36-38. The nitrogen containing material can be a nitrogen containing heterocyclic compound. Column 2, lines 60-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman to use the pH taught by Eckles in the bath with an expectation of desirable coating results, because Heiman teaches to provide an aqueous acid bath with zinc ions for immersion or electrolytic plating and that the acid in the bath can be 0.2 to 5 N, and Eckles teaches that in an aqueous acidic bath with zinc ions for electroplating the desirable pH is 3.5 to 6.2. One of ordinary skill in the art would optimize within that range to find the most desirable pH for the particular use desired. It would further have been obvious to modify Heiman to provide the brightener (inhibitor) material and complexing material in the bath as suggested by Eckles with an expectation of desirably bright coated material, because Heiman teaches to provide an aqueous acid bath with zinc ions for immersion or electrolytic plating, and Eckles teaches that in an aqueous acidic bath with zinc ions for electroplating it is

desirable to provide a brightener and complexing material to provide a desirable appearance to the coating, and this desire for a bright appearance would be present for electroplating or immersion plating. It would further have been obvious to optimize the ranges of material taught by Heiman in view of Eckles to provide the optimum amounts of materials for the precise purpose of the article to be coated, because both references teach desirable ranges of amounts of materials to be used in the bath and to provide the optimum for the purpose being used.

7. Claims 29-31, 37-39, 41-42, 77 and 88-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman in view of Eckles as applied to claims 28, 36, 40, 50-52, 54, 57-63, 65 and 68-71 above, and further in view of Haydu et al (US 5182006).

Heiman in view of Eckles teaches all the features of these claims except the precise cleaning process. Heiman teaches that prior to coating the article is first thoroughly degreased and cleaned so as to remove any grease, dirt or other undesirable foreign materials on the surface. Column 3, lines 5-10. The surface is also treated prior to coating with acid. Column 3, lines 15-25. Cleaning can be performed with an alkaline cleaner. Column 3, lines 40-45. After cleaning the article can be water rinsed. Column 3, lines 20-27.

Haydu teaches that it is conventional to prepare aluminum substrates for zincating by alkaline cleaning followed by a cold water rinse, then etching followed by a water rinse, then desmutting followed by a rinse, and then zincate coating by an

immersion zinc bath. Column 2, lines 5-20. Haydu also teaches that the zinc coating bath also functions as an etching solution. Column 32, lines 25-30. It is also known follow the first zincate coating with a second zincate coating. Column 2, lines 30-40. Cleaning can be done with an alkaline cleaner. Column 4, lines 1-10. Etching can be done with an acid etchant. Column 4, lines 10-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman in view of Eckles to use the full cleaning process taught by Haydu in order to provide a fully prepared substrate for coating because Heiman in view of Eckles teaches a zincate plating process and Haydu teaches a cleaning process to fully prepare a substrate for zinc plating. The rinsing of the immersion plated article would be suggested as further treatment is to be provided.

8. Claims 55, 56, 66, 67, 72, 73, 82 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman in view of Eckles as applied to claims 28, 36, 40, 50-52, 54, 57-63, 65 and 68-71 above, and further in view of McCoy et al (US 4356067).

Heiman in view of Eckles teaches all the features of these claims except the precise inhibitor (brightener) material.

McCoy teaches that a known brightener for use in a zinc plating solution is 2-mercaptobenzimidazole. Column 2, lines 1-10 and column 7, lines 30-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman in view of Eckles to use a further known

brightener as taught by McCoy in order to provide a desirably bright coating because Heiman in view of Eckles teaches a zincate plating process with brightener and McCoy teaches a known brightener for zinc plating.

*Response to Arguments*

9. Applicant's arguments filed June 19, 2006 have been fully considered but they are not persuasive.

As to the 35 USC 103 rejection of the claims, applicant argues that the have amended the claims to clarify that immersion plating is used and to specify the inhibitors, and that no combination of Heiman in view of Eckles, with or without the secondary references, discloses or suggest all the features of applicants claims. The Examiner has cited Heiman as teaching an immersion plating solution that does not provide the pH of the solution, the presence of inhibitor, the amounts of each material in the bath, the presence of complexing agent or the specific inhibitors as claimed, according to applicant. Applicant argues that the use of Eckles to fill these gaps is improper due to the many and well known differences between electroplating and immersion plating and the chemistry used in electroplating is not applicable to immersion plating, and for this reason the combination of the references would not have rendered obvious to presently claimed invention. Applicant further argues that the possibility that the brighteners of Eckles could fall within the scope of the claimed inhibitors has been eliminated by applicant's amendments to the claims.

The Examiner has reviewed these arguments, however, the rejection is maintained. The primary reference to Heiman not only teaches that a zinc, fluoride, nickel and/or cobalt ion containing bath can be used for immersion coating, but also teaches that the same bath can be used to perform electroplating. See column 6, lines 70-75. The Examiner has cited Eckles as teaching another zinc ion bath for coating, and desirable conditions and ingredients for that bath. While Eckles teaches that the bath is for electroplating, Heiman teaches the equivalent use of zinc ion baths for immersion plating and electroplating purposes. Applicant argues that there are significant differences between immersion plating and electroplating, however, applicant does not address the fact that Heiman specifically provides that the immersion plating bath can be used for electroplating purposes with an expectation of success. As discussed in the rejection above, it would have been obvious in both immersion and electroplating baths to add a brightener and complexing material, because it would be desired to improve the appearance of the resulting coating in all forms of coating. As to applicant's argument that the brightener of Eckles cannot fall within the scope of the claimed inhibitors due to applicant's amendments to the claims, the Examiner disagrees. The amended independent claims indicate the inhibitor can be a "nitrogen containing heterocyclic compound", which is taught by Eckles. See the formula of column 2, lines 60-65.

*Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KATHERINE BAREFORD  
PRIMARY EXAMINER